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**THE BIRTH OF MODERN RIVERINE WARFARE: U.S. RIVERINE
OPERATIONS IN THE VIETNAM WAR**

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature:_____

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Abstract

This paper examines U.S. riverine operations in the Vietnam War. With the current drive to establish a riverine capability within the U.S. Armed Forces as an integral part of the GWOT and small wars of the future, the evolution and operation of the U.S. riverine force during the Vietnam War serves as an effective blueprint for the conduct of modern riverine warfare.

American riverine forces in Vietnam operated in a diverse range of brown and green water environments, successfully conducting a wide variety of missions. The evolution of these forces reflected the continuing need to develop the capabilities necessary for these operations. Their success was largely derived from experience which resulted in the creation of a variety of discrete riverine task forces specially configured for their specific missions as the situation dictated. U.S. riverine operations in Vietnam illustrate the complex nature of operations in brown and green water and the inherently joint requirement of the forces involved. The lessons learned as a result of these operations should be incorporated as a fundamental part of the creation of any modern riverine force.

THE BIRTH OF MODERN RIVERINE WARFARE: U.S. RIVERINE OPERATIONS IN THE VIETNAM WAR

In June of 2005 the Chief of Naval Operations called for the U.S. Navy to begin development of a riverine force and navy expeditionary combat battalion in order to expand the Navy's capabilities to prosecute the Global War on Terrorism (GWOT).¹ *CNO Guidance for 2006: Meeting the Challenge of a New Era* identifies the creation of a Navy Expeditionary Combat Command and development of concepts for green and brown water operations as essential capabilities in support of the Navy's role in current and future operations. It further calls for development of "adaptive force packages and flexible deployment concepts to include NSW, U.S. Coast Guard, and coalition partners in support of operations in blue, green, and brown water environments."² In an age when U.S. Navy's blue water dominance is virtually unchallenged, attention is beginning to turn towards its capabilities in undertaking joint green water and brown water operations as part of its greater role in the GWOT and small wars of the future. Controlling the Rivers, a recent article which appeared in *Proceedings*, further highlights the critical need to develop "a dedicated, joint riverine, inland waterway operating capability" in the world's strategically important green and brown water environments. "Developing a joint maritime capability to operate effectively on inland waterways in support of the joint force commander is critical to the success of future operations as the U.S. military transforms for the 21st Century."³

A large percentage of the world's population lives in close proximity of the seacoast or rivers. The vast majority of the world's commerce moves by sea through

seaports along the coasts and rivers. In many parts of the world, rivers provide the only access to some regions. Conversely, the difficult terrain of brown water environments such as swamps, marshes and wetlands have historically provided sanctuary for insurgents. It is inevitable that these areas will play an important role in the GWOT and small wars of the future. Capability to operate in this domain is essential. Throughout history, this need has been no less important. The above statements echo similar sentiments expressed by leaders during the Vietnam War and many wars in the past. River and coastal warfare have always been an important part of the America's warfighting capability. Riverine and coastal operations played important roles in the French and Indian War, American Revolution, The War of 1812, the Second Seminole War, The American Civil War, Vietnam, and more recently in Iraq.

Traditionally (and currently in Iraq), America has relied on ad hoc riverine forces created from the available resources and tailored for specific circumstances. The complex nature of riverine warfare has generally defied the creation of standing riverine forces. Brown water operations are inherently joint. They require the close cooperation of forces able to operate on both land and water, and in the modern age, air. As such, riverine operations have never become the sole responsibility of any one service. Further, the extreme variation of brown and green water environments and the capabilities required to conduct a broad range of military operations in them makes the creation of a generic, standing riverine force difficult.

Riverine forces come in many shapes and sizes dependent on environment and mission capability, defying a “one size fits all” approach to force structure. Merely providing a small boat capability to operate on water does not imply the ability to operate

effectively to successfully achieve specific mission objectives. No war in the modern era illustrates this fundamental nature of riverine warfare better than the Vietnam War. The riverine aspects of the war in Vietnam provide an invaluable study for the creation and employment of a modern riverine force. The nature of the geography and demographics in Vietnam ultimately made control of the rivers and coastal regions vital. To meet this need, the U.S. created the first modern riverine force, adapting civilian and military small craft as necessary and relearning tactics and establishing informal doctrine through experience. The immense scope of the river and coastal operations undertaken by the U.S. and its allies in this war resulted in the creation of the largest and most capable riverine force in history. Operations were conducted in a wide variety of environments, from shallow coastal waters to rivers and small canals to marshes and dense mangrove swamps, flooded grasslands and rice paddies, even urban areas. The riverine forces conducted a wide range of missions including coastal interdiction, river patrol, river assault, convoy protection and psychological operations.

To reflect the complexities of these operations, the riverine force grew to include five distinctly different task forces with different missions, tactics and force compositions. As critical new mission areas were identified, forces were specially created to meet those needs. Each task force ultimately developed its own unique joint flavor as the situation warranted. This evolutionary process resulted in the creation of an extremely adaptive riverine force that still bears study today.

The country of South Vietnam comprised a land area roughly the size of California with 1,435 miles of coastline gently curving along the South China Sea.⁴ Vietnam's diverse range of terrain included mountains and highlands, tropical forests, and

vast river deltas forming extensive lowlands characterized by rice paddies, marshes and dense mangrove swamps laced by countless rivers and canals.⁵ These extensive coastal and river areas formed a dominant feature in the struggle for South Vietnam.

"Control of the waterways of Vietnam also implies control of a large part of that country's population. Vast numbers of people live on or near the rivers, canals and seacoasts. Waterborne transportation is relied upon almost exclusively in the rural areas for movement of goods and crops to market, and for inter-village communications. Fish from the rivers and seas are an important staple in the Vietnamese diet. Wet rice farming, the principal agricultural activity, requires an intricate system of irrigation dikes and canals. It was inevitable that a significant phase of the counterinsurgency war in Vietnam would be fought on water." ⁶

While contemporary American involvement in Vietnam began in 1950 with limited advisory and military assistance to the French and later to the South Vietnamese forces, by the early 1960s American military leaders realized that the stabilization of South Vietnam would require an increased role by U.S. forces. In June 1961, the CNO cited an urgent need for the U.S. Navy to assume naval responsibilities in the waterways and rivers in South Vietnam. In 1964 the Bucklew report concluded that the significant level of infiltration from the North and the general lack of resistance by the Vietnamese Navy warranted an increased U.S. naval presence.⁷ These concerns would be galvanized into actions as the result of an incident in a remote bay on the coast of South Vietnam.

On 16 February 1965, a U.S. Army helicopter transiting the coast on a medical rescue mission sighted a camouflaged trawler anchored close ashore in Vung Ro Bay on the remote central coast of South Vietnam. Aircraft were called in to investigate, and eventually air strikes destroyed the trawler. The resulting investigation discovered over 100 tons of Russian and Chinese made weapons, ammunition and medical supplies on

board the sunken trawler and cached in the immediate area.⁸ Additional evidence indicated that widespread seaborne infiltration had been going on for some time. The Vung Ro Bay incident not only confirmed extensive seaborne infiltration by the communist forces, it further highlighted the South Vietnamese armed forces lack of willingness or ability to interdict the flow of supplies.⁹

The overall commander of U.S. military forces in Vietnam, General Westmoreland, believed that prior to 1965, the Viet Cong insurgents were receiving an estimated 70 percent of their supplies by maritime infiltration.¹⁰ To prevent the enemy from strengthening forces in South Vietnam through seaborne infiltration General Westmoreland called for an aggressive offshore anti-infiltration patrol. This led to the establishment of Task Force 115, the Coastal Surveillance Force.¹¹ The resulting coastal patrol operation conducted by U.S. Navy, U.S. Coast Guard and Vietnamese Navy forces was named Market Time. Maritime patrol aircraft, ships and small craft conducted coastal patrol barrier operations from the 17th parallel in the north to the Cambodian border in the south in a declared defensive sea area extending 40 miles from the coast.¹² In addition to coastal patrol, Market Time forces were tasked to provide naval gunfire support for ground forces conducting amphibious operations along the coast and served as blockading forces in encirclement operations near the coast and large rivers.¹³ While the radar-equipped aircraft and navy ships were effective in patrolling offshore, it became apparent smaller craft with better shallow water patrol capabilities were needed. This led to the employment of the 50 foot PCFs (Patrol Craft, Fast) or swift boats, commercial boats converted for U.S. Navy use. The PCFs were further augmented by 82 foot Water Patrol Boats (WPBs), cutters operated by the U.S. Coast Guard.¹⁴ Due to the limited

range and sea keeping abilities of these smaller boats, they were supported by a variety of larger amphibious ships, LSTs (Landing Ship, Tank) and LSDs (Landing Ship, Dock) which served as mobile floating bases. The destroyers, destroyer escorts and ocean going minesweepers that patrolled the outer barriers also supported the patrol craft, serving as refueling stations and carrying relief crews to extend the patrols of smaller WPBs and PCFs. This support was especially critical for the PCF patrols, for while the larger, more seaworthy WPBs provided facilities for bunking and messing, the smaller PCFs provided no such amenities for the crew, greatly increasing fatigue on longer patrols. The radar capabilities of the aircraft and the ships also played a key role in the success of the interdiction operations. Early, covert detection of the infiltrating trawlers was essential. Due to political constraints, trawlers outside the maritime zone could not be intercepted. Thus, trawlers alerted to their detection by patrol forces often aborted their infiltration attempts, allowing them to make multiple tries. Further, early detection was required to allow intercepts by multiple patrol craft. The small, unarmored patrol craft were at a disadvantage versus the large, steel-hulled trawlers which were often more heavily armed and provided a more stable gunnery platform.¹⁵ The unarmored craft were similarly vulnerable to hostile fire from the beach when conducting operations close in to the shore. The Market Time interdiction efforts proved very effective, eventually deterring coastal infiltration altogether, save for a few desperate attempts during the Tet offensive.

Though the Market Time forces of TF115 proved effective in largely eliminating sea borne infiltration along the coast, the communist forces adapted to other means. Supplies continued flowing into the south down the Ho Chi Minh trail, or via the port of Sihanoukville in Cambodia, transshipped across the border and into the Mekong Delta

via its extensive network of canals and waterways.¹⁶ One of the most vital regions in South Vietnam, the delta was a lowland area formed by the Mekong and Bassac rivers, crisscrossed by a complex network of rivers and canals, with large areas of marsh, forest or dense mangrove swamp.¹⁷ Accounting for roughly one quarter of the total territory and home to 8 million inhabitants, more than half of the population of South Vietnam, the delta produced 80 percent of the rice grown in Vietnam. Control of the delta region was essential to the ultimate success of the government of South Vietnam.¹⁸

It was also estimated that the Viet Cong insurgents controlled roughly 40 percent of the territory and 25 percent of the population the delta.¹⁹ By mid 1966, estimated enemy strength in delta was over 82,000 personnel.²⁰ Due to the communist insurgents' increasing disruption of commerce and taxation of the local populace, roads and waterways had fallen into disuse. Once the rice bowl of Southeast Asia, South Vietnam had to resort to importing rice to feed its own population.

North of the Delta lay the Rung Sat Special Zone (RSSZ), a dense mangrove swamp through which ran the Long Tau, the major shipping channel which connected South Vietnamese capital and major port, Saigon, to the sea. The RSSZ served as a sanctuary to a large VC force. Ships transiting the Long Tau shipping channel regularly came under rocket, recoilless rifle and command detonated mine attack from the banks in the RSSZ. In a region where everything moved by water, it was imperative to gain control of the waterways for friendly use, and to deny their use to the enemy.²¹ The need to interdict the insurgent's movement of supplies and secure these vital inland waterways in the Mekong Delta and RSSZ for friendly use led to the establishment of the Task Force 116 River Patrol, known as Game Warden.

Game Warden forces conducted river patrols, interdiction and waterborne guard post ambushes using small, maneuverable PBRs (Patrol Boat River). The PBR was a 31 foot fiberglass hulled boat adapted from a civilian pleasure craft and armed with a variety of .50 caliber and 7.62mm weapons and 40mm grenade launchers. These patrols initially operated from LST and LSD offshore amphibious mobile support bases, conducting river patrols up to 25 miles inland.²² Operating the small craft from offshore proved difficult and bases were eventually constructed inland along the riverbanks, which also had the advantage of increasing the range of the patrols. Operating in territory often controlled by enemy forces, Game Warden patrols proved extremely vulnerable to enemy ambush and mining from the banks. Without ground forces providing bank security or continuous air support, enemy forces often held the initiative in engaging the patrols and were able to withdraw from the range of the PBR's light weapons. The vulnerability of Game Warden forces to ambush from the banks highlighted not only the need for the supporting helicopter gunships, but also for ground forces to secure the banks.²³ To increase the effectiveness of the patrols they were supported by UH-1B gunships of the Seawolves (Helicopter Attack Light Squadron THREE) operating from helicopter landing pads aboard the amphibious support ships. The UH-1B gunships were provided and maintained by the U.S. Army and initially piloted by Army aircrews until Navy personnel could be trained in the mission. Game Warden operations were further augmented with SEALs, WPBs and PCFs from Market Time and numerous other small craft.²⁴

While Game Warden proved successful in interdicting VC activity on the larger rivers and waterways, the VC moved to smaller canals and waterways to avoid the patrols

or withdrew further into sanctuary areas. It became increasingly obvious to U.S. leaders that Game Garden forces could only 'harass and interdict' enemy forces out to the range of their guns. Real control of the Delta could only come from the long- term employment of ground forces. This need led to the creation of the Mobile Riverine Force, a unique joint venture of the U.S. Army and Navy into brown water warfare.

As the U.S role in the war continued to expand COMUSMACV realized a greater U.S. ground force presence was required to gain control over the Mekong Delta and the RSSZ adjacent to Saigon.²⁵ However, deployment of ground forces in the Mekong and RSSZ presented unique difficulties. The wet nature of the Mekong Delta area meant there was virtually no land available that was suitable for the basing of large tactical ground units. What little land existed was either densely populated or already occupied by ARVN forces. The disruption that would be caused by overcrowding or displacement of the population was politically unacceptable to the government of South Vietnam.²⁶

Further, the geography of the region made employment of ground forces difficult. The numerous rivers, canals and swamps severely limited ground mobility. There was only one major hard surfaced road running across the region, and the capacity of the bridges crossing the countless waterways was limited. Lack of a developed road network largely precluded the use of mechanized forces, and while the terrain was suitable for insertion of forces by helicopter, once those forces were on the ground, movement was greatly restricted by mud, ditches and canals.²⁷ Lack of roadways, airfields or port facilities presented difficulties in the resupply of any large force operating in the area.

However, while roadway infrastructure was limited, the Delta contained a highly developed waterway system, with over 2400 km navigable natural waterways and 4000 km of canals.²⁸ In order to exploit these waterways, a Mekong Delta Mobile Afloat Force was envisioned -- a highly mobile force of heavily armed and armored landing craft with embarked ground troops capable of conducting assault operations and sustained search and destroy missions from the rivers.²⁹ In addition to providing mobility by transporting troops and artillery, the assault craft provided gunfire support from heavily armed and armored river craft, effectively replacing the armored forces of the infantry. This force was based aboard specially modified amphibious ships that provided mobile support bases providing transport, billeting, repair and command and control facilities for the assault forces.³⁰ This concept of a Mobile Afloat Force ultimately led to the creation of the Mobile Riverine Force, a joint Army-Navy force composed of an army brigade and heavily armed and armored river assault craft of the Navy's TF117 Riverine Assault Force.

While The U.S. Marine Corps was traditionally the force used by the Navy for amphibious assault operations, the Marine units in Vietnam had their maximum strength committed elsewhere and were unavailable.³¹ The decision had been made to employ the Marines in the north in consideration of their amphibious assault and over the beach logistics capability, desirable in the northern region where there was little existing logistics infrastructure. Further, the Marine units were configured with armor and heavy equipment unsuitable for operations in the delta.³²

Instead, the Army provided the ground forces in the form of the 2nd Brigade of the 9th Infantry Division. The brigade was reorganized and trained to be uniquely

capable of operating in a riverine environment. Vehicles, tanks and heavy equipment were eliminated.³³ The riverine craft of TF117 would serve as the MRF's armor and provide mobility.³⁴ An additional advantage was this reorganization of the division leant itself well to air mobility.

The Navy flotilla would consist of two major components comprising a Mobile Support Base and two River Assault Squadrons. The mobile support base would consist of self-propelled barracks ships (APBs) configured with specialized command and control centers, LSTs configured for billeting and small craft support, harbor tugs, and landing craft repair ships to provide full support and transportation for a full army brigade, its support elements and the navy riverine craft.³⁵ The larger ships were also configured with helicopter landing pads and their shallow draft amphibious capabilities enabled them to operate in the shallow coastal waters and rivers of the delta.³⁶

The navy river assault squadrons would provide tactical water mobility. Each assault squadron would be capable of lifting the combat elements of one reinforced infantry battalion. A series of heavily armed and armored riverine assault craft were converted from 60 foot LCM-6 landing craft. Each squadron was composed of 26 ATC armored troop transports, five monitor 'battleships', 2 CCB command and communication boats, and 16 Assault Support Patrol Boats (ASPBs). Some ATCs were specially outfitted with helicopter pads and equipped as refuellers or medical aid stations.³⁷

The MRF was capable of deploying the force into a combat area by water, land, and air for a range extending 50 km out from the mobile support base. Game Warden and other forces operating in the area provided intelligence including hydrographic information, potential helicopter landing zones and artillery sites, population

concentrations and enemy forces. Preparatory fire was delivered by Navy river assault craft, NGFS, artillery and aircraft.³⁸ During operations, continuous air cover was provided by helicopter gunships and Tacair. Brigade artillery could be propositioned by helicopter or towed into place on floating pontoon barges in the rivers to provide continuous fire support. Blocking forces could be delivered by land, air and sea, while the ASPBs of the River Assault Squadron furnished forward, flank and rear security, close in fire support, and forward command post protection.³⁹ Resupply and refueling was conducted from the APBs and LSTs by ATC and helicopter.⁴⁰

In practice, the MRF operated under Army tasking as an element of the 9th Infantry Division.⁴¹ However, the MRF ultimately did not operate under a joint task force commander. The Army and Navy components remained under their own separate commanders. Operational control remained with each branch, while the Army exercised tactical control of the supporting Navy elements.⁴² This unique command relationship within the MRF relied heavily on close cooperation and coordination between the Army brigade and Navy flotilla commanders.

Operational planning, control and execution were centralized at the brigade and flotilla staff level, due to the difference inherent in the organization of the Army and Navy units.⁴³ While the brigade and flotilla staffs roughly corresponded, at the level of battalion and river assault squadron, the battalion commander, typically a lieutenant colonel, was dealing with a lieutenant commander squadron commander operating without a comparable staff. The two boat divisions that made up the RAS were commanded by junior officers that were similarly limited in staff. Both platoon leaders

and rifle company commanders were often dealing with Navy enlisted men commanding the individual river craft.⁴⁴

During operations, movements were controlled and coordinated from the flagship joint tactical operations center specially constructed on the APBs and manned jointly by the brigade and flotilla staffs providing a focal point for the communications and for monitoring operations.⁴⁵ The rear battalion command post also operated from another TOC. The brigade forward command group including the brigade commander typically operated from the forward fire support base or aloft in a command helicopter.

The forward Battalion command post manned by the battalion commander and the Navy River Assault Squadron commander was located in a CCB command and communications boat that accompanied the troop transports during waterborne assault operations. When a helicopter was available, the battalion commander and artillery liaison often controlled from air.⁴⁶ Each navy river division was divided into three sections, each consisting of 3 ATCs that carried the rifle company accompanied by one monitor for fire support.⁴⁷

The unique combination of capabilities inherent to the MRF contributed greatly to its success. "The joint river operations conducted by the U.S. Army and Navy in South Vietnam contributed to the success of the military campaign in the Mekong delta and added substantially to U.S. knowledge of riverine operations"⁴⁸ "During the Tet crisis in 1968, the MRF was the only friendly force that retained the ability to mount sustained and effective counteroffensive operations in the Mekong Delta. Its highly mobile firepower was ultimately credited by General Westmoreland for saving the Delta."⁴⁹

Riverine warfare in Vietnam culminated with the creation of TF194 for operation SEALORDS (Southeast Asia, Lake, Ocean, River and Delta Strategy) at the end of 1968. SEALORDS represented the final evolution of riverine operations in Vietnam. The independent employment of the three coastal, river, and river assault task forces gave way to the concept of a single brown water fleet combining the capabilities of each to complement one another. The heavy armored craft of TF 117 played the role of the battle ships (or armor), while the lighter and faster PCF and PBR performed the roles of cruisers and destroyers (cavalry). Armored troop transports functioned as amphibious ships to deliver ground forces of Vietnamese Marines.⁵⁰ Navy SEAL teams and Army Air Cavalry forces also participated in assaults. For air support, the UH-1B gunships of the Seawolves were joined by the OV-10 Bronco fixed wing strike aircraft of the Black Ponies of VAL-4.⁵¹

SEALORDS continued the pacification campaign in the Delta, combined with extensive barrier operations in the major waterways running along Vietnam's border with Cambodia. The river assault forces conducted strike operations to eliminate enemy resistance and clear areas of enemy occupation, while the PBRs and PCFs maintained patrols, supported as necessary by riverine assault craft to interdict the enemy and prevent them from returning.⁵² Floating bases were established in the delta to support these efforts and to conduct psychological operations to win the support of the population.⁵³

A fundamental aspect of SEALORDS included the Vietnamization of the riverine force under the ACTOV (Accelerated Turnover to Vietnam) program. As Vietnamese Navy units were trained to take over operations, the riverine force assets were increasingly turned over to Vietnamese forces. Ultimately, the end of the U.S.

involvement in Vietnam saw the disestablishment of all U.S. riverine forces. Riverine operations within the U.S. Armed Forces were largely consigned to the realm of special forces.

While the U.S. riverine force was phased out with the end of the Vietnam War, its operations led to the creation of modern doctrine for riverine operations based on valuable lessons learned. By 1967, the U.S. Army Combat Developments Command had published TT 31-75 *Riverine Operations Interim Training Text*, which formed the basis for MRF operations.⁵⁴ The U.S. Marines adopted FMFM 8-4 *Interim Doctrine for Riverine Operations* in 1967. The Navy followed suit with its own NWP 21(A) *Doctrine for Riverine Operations* based largely on its MRF, Market Time and Game Warden experiences and later NWP 21(B), based more on SEALORDS type barrier and patrol operations.⁵⁵ These documents provided the basis for later doctrinal developments. The services recognized the fundamentally joint nature of riverine operations, with a preferred organization as a joint task force under a single joint force commander. For inland operations, coordination with ground forces was essential. Indeed, the most effective model for inland river assault operations placed riverine operations under the land forces commander as an organic part of the ground forces. In addition to ground forces, close air support was critical to the success of riverine forces. The Seawolves operated as an organic element of Game Warden forces, briefing with the patrols and operating from the same Mobile Riverine Bases, allowing for close coordination. Operating on a three minute ready, Seawolf gunships were able to respond anywhere within the patrol radius of the boats usually within 15 minutes or less. Perhaps most importantly, the evolution of riverine warfare in Vietnam illustrates the complexity of brown and green water

operations and the variety of force structures and procedures necessary to successfully accomplish a wide variety of missions in these environments.

Although America's experience in Vietnam did not leave the legacy of a standing riverine capability in the armed forces, its example leaves a valuable blueprint and lessons learned for the creation of a modern force capable of conducting a wide range of military operations in green and brown water environments as described in *CNO Guidance for 2006: Meeting the Challenge of a New Era*. The evolution of the riverine war in Vietnam provides useful insights into the incredibly diverse nature of forces required to operate successfully in this complex environment that are still pertinent today. While technology may change, many elements of the river and coastal war in Vietnam would not have been unfamiliar to soldiers and sailors of past riverine forces. Coastal blockade, waterborne guard post ambushes interdiction patrols, cordon and search operations using infantry and small boats as blocking forces, employment of ground forces for river assaults, gunfire support, floating artillery had all been used throughout American history in conflicts as diverse as the French and Indian War and Second Seminole War. Even the heavily armored riverine assault craft of the joint Army-Navy MRF of bear a striking resemblance to the river gunboat and monitor fleets of the Civil War. Though helicopter gunships might have been hard to explain to Roger's Rangers or to the jack tar of the 1860s, they probably would have approved.

NOTES

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